The Utah Department of Health and Centers for Disease Control and Prevention

WEST NILE VIRUS (WNV) INFECTION

Information for Clinicians

CLINICAL FEATURES

Asymptomatic Infection

About 80% of infections are asymptomatic.

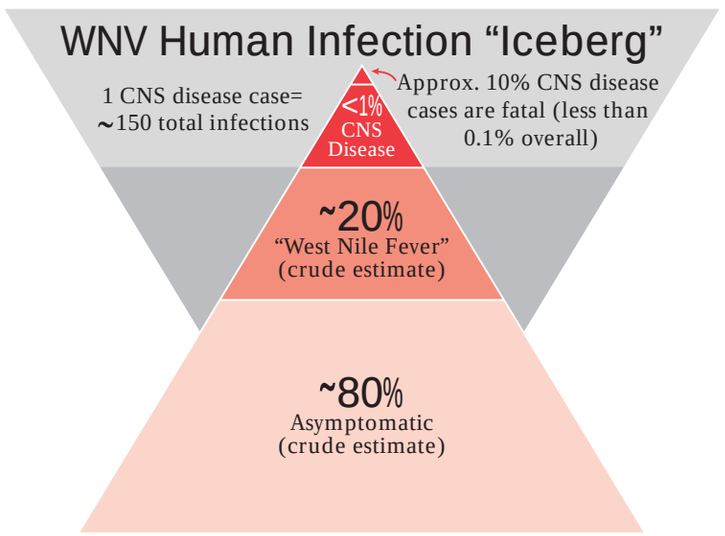
Less Severe Infection (West Nile Fever)

- About 20% of infections
- Incubation period 2–14 days.
- Symptoms last 3–6 days, up to 2 weeks.
- Febrile illness with sudden onset accompanied by:
  - malaise
  - anorexia
  - nausea
  - vomiting
  - eye pain
  - headache
  - myalgia
  - rash
  - lymphadenopathy

The full clinical spectrum of West Nile fever has not been determined in the United States.

Severe Infection

- Approximately 1/150 infections are serious neurologic disease. Increasing age is most important risk factor.
- Clinical syndromes:
  - Encephalitis
  - Meningitis
  - Acute flaccid paralysis
  - Other neurological signs/symptoms, such as:
    - ataxia and extrapyramidal signs
    - cranial nerve abnormalities
    - optic neuritis
    - polyradiculitis
    - seizures
    - myelitis
- Some patients with maculopapular/morbilliform rash or GI symptoms.
- Occasionally, myocarditis, pancreatitis, fulminant hepatitis, vision problems.



Clinical Suspicion

- Diagnosis of WNV infection is based on a high index of clinical suspicion and specific laboratory tests.
- Adults over 50 with unexplained encephalitis/meningitis/paralysis in summer and fall should be highest suspicion.
- Severe infection can occur in patients of all ages, and the transmission season is extended in some areas. Consider WNV in all patients with unexplained neurologic disease.

DIAGNOSIS

Diagnostic Testing

- Diagnosis of WNV infection depends on compatible clinical presentation and laboratory confirmation.
- Laboratory diagnosis is usually based upon detection of IgM antibody in serum or CSF via IgM antibody capture ELISA.
- Nucleic acid testing is not generally useful for diagnosing WNV infection.
- IgM antibodies are usually present during acute illness; a convalescent serum demonstrating increasing titer is needed to confirm an acute infection.
- IgM antibodies can persist in serum up to 500 days.
- Patients recently vaccinated against or infected with related viruses (e.g., yellow fever, Japanese encephalitis, dengue) may have positive antibody results.
- Testing is readily available in the private sector.
- Patients with neurologic disease may be tested at Utah Public Health Laboratory. Call local or state health department for more information.

Specimens: Serum

- Collect acute and convalescent (2–4 weeks after acute) sera.
- If collecting in red/tiger-topped tubes, spin prior to transport.
- Transport at 2–8º C. If transport is delayed, freeze serum.

Specimens: CSF

- Collect CSF
- Transport at room temperature
- If transport is delayed, store in refrigerator (2–8º C)

REPORTING

Report suspected WNV infection to your local health department or the Utah Department of Health:

1-888-EPI-UTAH (374-8824)

- West Nile virus is a reportable disease in Utah under Section R386-702-2 of the Communicable Disease Rule.

West Nile virus updates are available at:
http://www.cdc.gov/ncidod/dvbid/westnile or www.health.utah.gov/wnv.

LAB FINDINGS

CBC:
- Total leukocyte counts are normal or elevated.
- Lymphocytopenia and anemia may occur.

Chemistries:
- Hyponatremia sometimes present, particularly with encephalitis.

CSF:
- Pleocytosis (usually with predominance of lymphocytes).
- Elevated protein.
- Normal glucose.

Imaging:
- MRI—in 1/3 of patients, shows enhancement of leptomeninges, periventricular areas, or both.
- CT is usually normal.

TREATMENT

Supportive. If severe disease, consider:
- Hospitalization
- IV fluids
- Respiratory support
- Prevention of secondary infection

At the time of printing, no treatment has been shown to provide benefit in controlled studies.

PREVENTION

- Protect from mosquito bites from dusk until dawn (that's when mosquitoes are most active).
- For best protection, use repellents containing DEET (N,N-diethyl-m-toluamide).
- Adults—use repellents containing up to 35% DEET.
- Children 2 months–12 years—use repellents with up to 10% DEET.
- Do not use DEET on children younger than 2 months.
- For added protection, wear long-sleeved shirts and pants.
- Drain standing water that collects in tires, flowerpots, rain barrels, clogged rain gutters, toys, and puddles.

Some useful references:
1. Emerging Infectious Diseases7 (4), 2001 (free copies at www.cdc.gov). This entire issue is on West Nile Virus.
2. Hayes and O'Leary, West Nile Virus Infection: A Pediatric Perspective. Pediatrics 113 (5), 1375, 2004.
3. Petersen, Marfin, and Gubler, West Nile Virus (Clinician's Corner). JAMA 290 (4) 524, 2003.
4. Fradin and Day, Comparative Efficacy of Insect Repellents Against Mosquito Bites. NEJM 347 (1), 2002.
5. Petersen and Marfin, West Nile Virus: A Primer for the Clinician [Review]. AIM 137 (8) 173-9, 2002.